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ABSTRACT

This report contains procedural guidelines to assist local Comprehensive Employment and Training Act (CETA) prime sponsor staff members in developing a labor market analysis of the local economy. The guidelines are designed to be used in conjunction with other materials that have been developed by the United States Department of Labor. The focus of the report is on "the how" of preparing a labor market analysis. The report consists of a set of 16 procedures, which, taken together, provide a step-by-step guide for the prime sponsor's staff members who are responsible for conducting an analysis of the local labor market. Under each procedure are listed concerns and pertinent issues that need to be considered. The procedures are designed as models; they can be adapted to meet the needs of each CETA agency. Following the main body of the report, three appendixes provide an in-depth discussion of important issues associated with conducting a labor market analysis. These issues are: (1) data display, (2) data collection, and (3) the development of a labor market information management reporting system. (KC)

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CONDUCTING A LABOR MARKET ANALYSIS
GUIDELINES AND PROCEDURES

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September 1980

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TABLE OF CONTENTS

	Page
FOREWORD	v
EXECUTIVE SUMMARY	vii
INTRODUCTION TO THE REPORT	1
OVERVIEW	3
DESCRIPTION OF REPORT	5
PROCEDURES	7
APPENDIX A--DATA DISPLAY	29
APPENDIX B--DATA COLLECTION	43
APPENDIX C--TOWARD THE DEVELOPMENT OF A LABOR MARKET MANAGEMENT INFORMATION SYSTEM	51
BIBLIOGRAPHY	59

FOREWORD

Conducting a Labor Market Analysis: Guidelines and Procedures is one of two products developed for the Fort Wayne (Indiana) Area Consortium. These products are intended to assist the staff of the consortium by providing guidelines and detailed procedures for gathering and using labor market information.

The contributions of the Fort Wayne Area Consortium in planning and participating in the development of these products are gratefully acknowledged. Appreciation also is expressed to project staff. Gale Zahniser, Program Associate, was the major author, and Brian Fitch was the Program Director.

Robert E. Taylor
Executive Director
The National Center for
Research in Vocational Education

EXECUTIVE SUMMARY

The procedural guidelines that follow are designed to assist local CETA prime sponsor staff members in developing a labor market analysis of the local economy. The guidelines are designed to be used in conjunction with other materials that have been developed by the U.S. Department of Labor. The focus of the report is on the how of preparing a labor market analysis.

The report itself consists of a set of sixteen procedures, which, taken together, provide a step-by-step guide for the prime sponsor's staff members who are responsible for conducting an analysis of the local labor market. Under each procedure are listed concerns and pertinent issues that need to be considered. The procedures are designed as models only. They can, and should be, adapted to meet the needs of each CETA agency. Following the main body of the report, there are three appendices that provide an in-depth discussion of important issues associated with conducting a labor market analysis. These issues are: (1) data display, (2) data collection, and (3) the development of a labor market information management reporting system.

INTRODUCTION TO THE REPORT

Since the Comprehensive Employment and Training Act of 1973 was first enacted, an analysis of the local-area economy and population has been a required part of the annual planning report which each CETA prime sponsor was required to submit to the U.S. Department of Labor. As a result, every prime sponsor agency has to some extent annually reviewed local employment, unemployment and labor force trends, examined local industrial performance, and looked at changes in the composition of the local economically disadvantaged population.

Ideally, the results of such exercises are used as an important part of a larger management and educational function that assists the agency in developing and implementing recommendations for (1) occupations in which classroom training should be offered for CETA clients; (2) the composition of the selected population subgroup that the prime sponsor should serve; and (3) the mix of strategies and services which would be in the prime sponsor's best interest to offer to unemployed, underemployed, and economically disadvantaged members of the local population.

Although many prime sponsors have been able to develop their labor market analysis into a tool that can be used as part of a larger educational and management function others have not, mostly through no fault of their own. For many, federal legislative planning requirements have detracted from time that was needed for developing the labor market analysis into a instrument useful for agency-wide management duties. For others, the problem was a serious lack of useable and useful data. For still others, the difficulties were ones associated with inexperienced staff and a substantial amount of staff turnover.

Throughout the 1970s, the U.S. Department of Labor has expended substantial time, money, and effort to reduce the obstacles related to data inadequacies and inexperienced, untrained staff. Although these efforts have not eliminated the problems, they have reduced their impact. Assistance is now available for the prime sponsor director who wishes to utilize the annual labor market analysis for more than just a part of a larger plan that is submitted to the Department of Labor primarily for compliance purposes.

The procedural guidelines that follow are designed to supplement those efforts which have already been developed by the Labor Department, and, consequently, should be used in conjunction with them. This is because the training materials and technical assistance guides that the Labor Department created contain much valuable information needed by the person responsible for conducting a labor market analysis. These materials afford an in-depth examination of statistical and analytical techniques, of labor market planning theory, and of sample data sources.

Consequently, it was neither necessary nor wise to duplicate that information here. Rather, elements from Department of Labor publications and those of other authors and researchers in the field of labor market information analysis are used here.

The emphasis in these other sources is on individual aspects of the labor market analysis (e.g., the data to use; the analytical techniques that are available; technical issues concerning analysis; the socioeconomic and political environment in which the analysis occurs). The focus here, in contrast, is on the "how" of conducting a labor market analysis. This report will incorporate material and information from these sources (or refer the reader to them), but this will occur in relation to where such data fit appropriately in the process of preparing a labor market analysis.

The focus of this report is admittedly narrow for it deals with only one aspect of a larger process termed labor market planning for employment and training programs. The preparation of the analysis is, oddly enough, both the end point and the beginning of the labor market planning process. It is the end point because it is the culmination of many other planning-related activities. Yet it is the beginning because once it is prepared, it becomes a guide (and a base) upon which clearer decisions regarding local-area employment and training programs can be made. The labor market analysis that is more than just a portion of an annual compliance plan submitted to the Department of Labor is both a valuable outcome of a larger labor market planning process and a necessary beginning that is part of a larger management function surrounding the administration and implementation of local CETA programs. As such, its preparation deserves the attention and discussion given here.

OVERVIEW

The preparation of the labor market analysis is one of several ongoing steps that should occur in the CETA prime sponsor's planning process. According to a planning model developed by Garth Mangum, James Morloc, Marion Pines, and David Snedeker in a book entitled: Job Market Futurity: Planning and Managing Local Manpower Programs, this step is one which calls for (1) a yearly monitoring of the local social and economic background for new problems or changes in old ones, and (2) a study of these problems which are found to be the most pressing. As stated by the authors:[1]

> The purpose of this step is to be alert for changes and new developments which affect the prime sponsor's concept of the local operating environment. The current status and economic outlook for the community in the year ahead is carefully reexamined. Changes in total employment and the industry and occupation structure are noted. Geographic shifts in employment location within the jurisdiction are noted. All economic development programs are reviewed to assess their implications for employment opportunities and training needs. Population trends are restudied with the emphasis on the impacts of migration and the age structure of the population. Labor force participation rates and changes in the incidence of unemployment and poverty for different age, sex, race and ethnic groups are most vital. All of this is to determine whether the originally identified labor market problems are the key ones or whether new targets and new objectives are dictated by events.

Depending upon the time, effort, and staffing that a prime sponsor agency director has been able to devote to the preparation of a labor market analysis, a yearly update of labor market trends may or may not be all that is needed. For some prime sponsors, a more complete understanding of recent historical patterns is needed in addition to a yearly update. This is especially true if the prime sponsor staff does not have a good grasp of past seasonal employment patterns or short- and long-term cyclical variations in the local economy. Likewise, if a prime sponsor is responsible for administering programs in several counties, a more complete examination of trends within the economically disadvantaged population or the labor force of each jurisdiction may be needed. Similarly, because of staffing or time constraints, a prime sponsor director may have previously limited a yearly labor market assessment to the Annual Planning Report which State Employment Security Agencies (SESA) produce for the local CETA agency. While such a report is quite adequate for most of the prime sponsor's planning needs, evidence may arise indicating a

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[1]Garth Mangum, et al., Job Market Futurity: Planning and Managing Local Manpower Programs, (Salt Lake City: Olympus Publishing Company, 1979) pp. 133.

need for (a) additional kinds of data; (b) a closer examination of some economic sectors other than those permitted by SESA data; or (c) a finer look at some areas within the prime sponsor's administrative jurisdiction.

For various reasons, a prime sponsor staff may want, and need, to do more with its yearly labor market analysis than just provide a yearly update to analyses that have been conducted previously. A need for a closer tie-in between labor market data and agency goals and objectives may be desired, or a closer analysis comparing agency program and performance data with labor market data may be needed. Such needs, when combined with situations like those expressed above, can suggest to a prime sponsor's staff that a more comprehensive labor market analysis is needed for the planning of employment and training programs in the local area.

It is to the prime sponsor staff in this situation that the procedures and guidelines that follow are directed. For those only needing to do what is in fact a yearly updating, these procedures will serve as a review and as a checklist for that which is already being done. For those needing to undertake a more comprehensive effort, however, the procedures will serve as a point of focus. They will give the staff or staff members responsible for conducting the analysis an overview of the needed steps and tasks from the outset. They will also provide an idea of the major concerns and issues that will have to be confronted at major points throughout the process. In this sense, the following report will also be a valuable reference for the prime sponsor staff. Many of the steps included as procedures probably are being carried out by the prime sponsor staff. However, as an outgrowth of this report, they can be seen within a more organized framework. From this perspective, it will be possible to see ways in which current activities or efforts may need to be expanded or combined with newly developed efforts in order to conduct a labor market analysis tailored to the needs of the particular prime sponsor agency.

DESCRIPTION OF THE REPORT

The following report consists of a set of sixteen procedures which, taken together, provide a step-by-step guide for the prime sponsor's staff members who are responsible for conducting an analysis of the local labor market. Under each procedure are listed concerns and pertinent issues that need to be considered. The procedures detailed in this report are designed as models only. They can, and should be, adapted to meet the individual needs of each CETA agency. Following the main body of the report, there are three appendices that provide an in-depth discussion of important issues associated with conducting a labor market analysis (and issues which cannot be examined easily within the main portion of the report).

The tone of the report is one that emphasizes the more non-technical aspects of labor market analysis. That is, highly sophisticated statistical and analytical techniques are not the focus. Rather, the assumption for this work is that the way in which data are chosen, interpreted, and utilized carries more importance than does the use of intricate statistical techniques. The emphasis, then, is one that stresses a systematic organization and examination of available labor market information. Only a few basic computations are needed for most of the work required for the labor market analysis. In instances where more complicated measures are needed, the user is referred to other references for a more thorough explanation. This does not mean that the more sophisticated measures can be ignored. The analyst or staff member doing the analysis must be acquainted with these measures, for they are utilized in the development of many of the data sets (e.g., projections and surveys) needed for the analysis. However, the focus here is on the interpretation of the data; knowledge of statistical techniques is needed for data selection, but once selected, more importance is accorded to the manner in which data are displayed, analyzed, and compared and contrasted with other information for a clearer interpretation of labor market activity.

The report heavily stresses the role of the individual analyst or staff member in the preparation of the labor market analysis. In fact the capabilities and abilities of the analyst are more important to the development of the analysis than is the availability of data. Data are important, but unless they can be turned into meaningful information (via the skills of a creative and knowledgeable analyst) that can be used for managerial decision making, they are useless. The role outlined for the analyst is not an easy one. That person needs to know the audience within the agency for whom the analysis is being

developed and the data sources that are available. This information must then be integrated with a firsthand knowledge of what is actually occurring in the labor market in such a way that agency managers and decision makers are educated to see the environment in which the CETA agency operates.

A good analyst can compensate for many data inadequacies by creatively interpreting data that are available, by displaying available data in a meaningful way, by examining "proxy" variables for which data exist, or by offering an educated guess that is based on careful observation of trends and situations. The role of the good analyst should not be confined and limited by a lack of precise and current numbers about specific labor market events (e.g., the exact numbers of job openings, or the exact numbers of unemployed youth in a given area). While precision is expected whenever possible, an interpretation of trends and patterns that tell what they signify for local employment and training programs is much more meaningful and valuable. The use of the following procedures and guidelines will help an analyst carry out the important tasks.

PROCEDURES

The following procedures are designed to help a prime sponsor agency's labor market analyst or planner develop an analysis of the local labor market for agency administrators and managers. Some of the activities and tasks included in this listing are already being done. However, the use of these procedures will help the individual to see where these efforts fit in the process of preparing a labor market analysis and where they need to be combined with others or modified in order to develop the desired product. Prime sponsor agency staff members are encouraged to adapt these to their own special needs.

1. Develop a General Outline for Contents of Labor Market Analysis

This is a very important step because it will define the scope of the data collection and selection activities that are to follow. The outline should not be one that limits the scope of the analyst's work, but rather one that provides an underlying base to it. As the analyst collects and assembles data that are needed for the analysis, the outline will become more focused and detailed. It may even undergo substantial change. However, it is good to have the areas that are to be covered in the completed report broadly outlined in some structured manner.

There are several tools that the analyst can use for this exercise, depending on the level of detail desired. The CETA legislation itself can provide a very general, broad outline. However, more structured detail is probably desired. From the analyst's regional Department of Labor office, outlines for the labor market section of annual planning grants can be obtained (these may be incorporated into curriculum materials that used to be offered through the Regional Training Centers). Also, the Forms Preparation Handbook published by the Employment and Training Administration can offer assistance. The only caution in relying upon these materials is that they focus on reporting requirements for the Department of Labor and may overlook some important local-level needs.

Other materials may be more helpful to the analyst. These include similar reports that other prime sponsors have produced, reports that other planning commissions and economic development agencies or overall Economic Development Programs prepared, the Annual Planning Report that State Employment Security Agencies (SESA) produce for the prime sponsor, and general texts that have been published on the theory of labor market planning.

Additionally, a meeting with the local SESA labor market analyst can be invaluable, as can be a meeting with local planners or analysts in other agencies. These latter individuals, especially, are helpful, because they are acquainted with data sources and use; they can offer insight for many succeeding steps that relate to these tasks.

The time and effort that need to be devoted to this particular step depends upon the skill and experience of the analyst. A novice will need to devote an appreciable amount of time while one who is more experienced can do this rapidly. Consideration should be given to work that has been done previously in the agency, and, whenever possible, this too should be used as a guide.

The components and structure of an outline will vary according to the needs of the individual agency. An excellent summary listing of topics which should be addressed in the outline are found in Job Market Futurity (Mangum et al. pages 133 and 134). The listing (see below) is taken from an annual Trend Analysis Report produced by the Chicago Mayor's Office of Manpower. The outline which the prime sponsor staff members develop does not have to be limited to these topics. However, these are helpful for the completion of this procedure. The topics are: .

1. Employment base. The report should assess the trend of local employment anticipated for the near future.

2. Industrial structure. The report should analyze the composition of employment by the industrial categories reported for the unemployed labor force and compare this structure and the rates of change in its components with those of the state and nation.

3. Occupational structure. The report should analyze the composition of employment by the occupational categories reported for the employed labor force and compare this structure and the rates of change in its components with those of the state and nation.

4. Geographic considerations. The report should analyze the geographic patterns of employment growth and decline.

5. Development programs. The report should assess the employment implications of prime sponsor taxation, land-use, and transportation policies. The effect of specific development projects (such as new housing projects) and major public works (such as airports) should be examined.

6. Business outlook. The report should assess the business outlook for the immediate year ahead. This assessment will help clarify the immediate plans of local employers which might affect occupational training plans and the outlook for developing on-the-job training positions.

7. Labor force. The report should assess the size and trends of changes in the labor force to obtain a feel for the supply side of the market and any significant changes in it likely to affect the prime sponsor's programs in the coming year.

8. Population composition. The report should analyze the population, its composition, factors that are changing, and factors causing change.

9. Labor force composition. The report should assess the demographic, education, and work history composition of the labor force and identify growth and decline within these categories.

10. Unemployment. The report should analyze unemployment. It should determine the socioeconomic, and demographic, industrial, and occupational characteristics of area unemployment. It should look at the short-term as well as the longer term outlook.

11. Overall assessment. From the foregoing analyses and other sources, the planner should develop a comprehensive picture of the employment and training target population. The total target population should be divided by age, race, and sex cohorts and their labor force; income; and educational and skill characteristics described. [2]

One additional element should be included. This is information about other training programs than those sponsored by CETA in the local area. The following should be included: public vocational education; two-year technical and junior colleges; private business and technical schools; apprenticeship programs; and private employer programs. Ideally, data on enrollments, completions, and, if pertinent, placements are desirable.

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[2] Garth Mangum, et al., pp. 133-134

2. Inventory and Identify Needed Data

This step is one that can be carried out quickly and easily. Basically, the actior that is needed here is a rapid review of data which the agency does and does not already have. Those data that the agency already has should be examined for the level of detail and aggregation offered. However, this should be not be of primary concern at this point. The important issue here is to develop an idea of both broad data gaps and needed data collection efforts.

3. Determine Geographic Level of Data Aggregation

At this point, a determination should be made about the level of detail desired for data representing each of the topics listed in the outline. For example, if the prime sponsor agency represents a consortium of countries, is data desired for each of the counties? For some data items, data may be desired at a much finer level--borough or township--while for others, regional or SMSA or even state level may suffice. Choices here depend ultimately on the scope and proposed use of the analysis.

Generally speaking, for total population growth and decline, the smallest possible detail is useful. For items like demographic characteristics of the disadvantaged population, labor force characteristics, and general employment and unemployment trends, county-level data are probably sufficient. If recent census data are available and time permits, an analysis could be done down to the census tract level. However, since most employment and training programs have been operating for almost a decade, most "poverty pockets" are already known. For special categorical program planning which arises periodically, a combination of in-house administrative data can be used to update census data.

For the labor market analysis, county-level industrial employment data are usually sufficient. Once trends are developed from this level, the information can be used as a base for developing individual firm-level employer surveys. Where such information already exists, it can be incorporated into the labor market analysis. However, the analysis itself often focuses on broader trends and patterns. These act as indicators that suggest the need for further, in-depth research, survey work, and analyses.

For occupational employment information, short of doing a local-area skills survey, data at an SMSA or a regional level are usually all that are available. Much valuable information can be gained from the use of SESA job bank information and from data produced through ESARS (the Employment Security Automated Security System), but often this information is at either an SMSA or a local SESA office level. Again, as with the industrial employment data, information on a broader level (SMSA, or for a

CETA consortium area, for example) is acceptable. If county-level, or smaller-area-level is desired, a special survey would be needed, or data from a regional or state-level industrial occupational matrix would have to be applied to the local level and estimates made of local occupational employment levels.

In summary, a county-level analysis is sufficient for most data. Where data exist for a major city or employment area within a county, this level of data should also be used and where data exist only on an SMSA or regional level, that too should be used. The task falls to the analyst to relate the data in a meaningful manner by a narrative that explains trends, patterns, and cycles expressed in the data.

The final level of geographic aggregation will, to a large extent, be determined by the data that are available. Nevertheless, at this stage, the desired geographic detail should not be sacrificed. Often, other agencies will have the data at a desired level of detail, and those states that have state data centers (like Indiana) can develop data for a wide variety of geographic areas.

4. Decide the Time Frame for the Labor Market Analysis

There are many options for the analyst in relation to the time frame selected for the analysis. For example, all effort can be concentrated on the present and/or the immediate future. Or, most of the focus can be upon the recent to the more distant past. Or, depending on prior work of this type within the agency, the past (at least the last ten years), the present, and the future can all receive equal attention. If extensive analyses have been done in the past, most of the effort should be focused on the present and short- to medium-term future. However, if little has been done previously, past trends should be studied, especially for industrial employment.

Past trends and patterns are valuable because they provide a benchmark against which present and expected future occurrences can be compared. By studying the past, present changes which occur on a monthly, quarterly, or annual basis can be viewed. Where there is consistency with the past, some sketchy expectations can be offered about the immediate, short-term future, or cautious assumptions can be made about public agency strategies needed to address the current situation. Additionally, a knowledge of past changes and fluctuations can indicate whether intense changes in current data sets are within the range of normality or whether they signify an abnormal situation that bears close monitoring.

Ideally, an agency will have some type of labor market analysis that includes trends of the recent past (five-to-ten years), an in-depth examination of the present, and an exploration of events and trends that seem likely to occur in the immediate future (six-to-eighteen months). A longer term

analysis based on projections can be valuable. However, projections should only be used as indicators. Recommendations for training programs and target groups to be served should not be made solely on the basis of projections. Rather, projected expectations about the future should be one of only several indicators that influence recommendations about the present.

5. Determine Substantive Emphasis of Report

The labor market analysis which the analyst prepares should examine both local-level economic and population patterns and trends. However, according to analytical work done in the past and the needs and objectives of the agency, equal emphasis need not be placed on both. For example, one agency may have had resources to conduct extensive local-level employment surveys, but not time or staffing to delve into the characteristics of the local economically disadvantaged population. Another may have been able to carefully examine its own client data files and those of other local social service agencies to develop a profile of the population eligible for CETA services, but, may have only general and broad information about local industries and occupations. Yet another may have had a staff that could only give moderate attention to both.

The analyst should examine the current needs, goals, and objectives of the agency, generally, at this point and consider the purpose and audience for which the analysis is being conducted. Then, the outline should be altered and the general substantive focus developed accordingly (e.g., both economy and population receive equal and in-depth treatment, one is emphasized more extensively than the other, or both are examined briefly and superficially).

6. Develop Detailed Outline

At this point, the general outline that was developed for step 1 should be given more detail. The broad topical areas that were selected should be combined with the selected choices that were made in steps 3,4, and 5 (level of geographic aggregation, timeframe, and emphasis of report), and more specific indicators should be developed for the outline. The time and effort that are spent developing the detail at this point will make the outline a more convenient tool to use for the data gathering exercises that are treated in the following paragraphs.

On the outline itself, specific data elements (or variables) should be listed at as detailed a level as possible. Labor force, for example, could be a main topic listing that can, in turn, be broken down into:

- o labor force-total civilian
- o labor force-male
- o labor force-female
- o labor force-white
- o labor force-black and other
- o labor force-youth.

For each of the entries, the desired geographic level should be specified (e.g., SMSA, county-level, consortium-wide totals) as should the desired time frames (e.g., monthly for the last five years; annually for the last five years, and monthly for the most recent year).

The analyst's personal experience and judgment will be needed here, and some experimentation may be required. Some data are only needed and/or are available on an annual basis, while other are issued on a monthly basis. Only after the analyst has worked with the data for awhile can a specific judgment be made regarding the desired time frame (and geographic level). Generally, however, for most historical data, annual data are sufficient. For the most recent two years, however, monthly, or, at the very least, quarterly data are desirable. For certain data variables, especially those related to specific population groups (e.g. youth, dropouts, incarcerated individuals), only annual figures will be available. As the analyst gathers data and prepares them for the analysis, refinements will be made to the outline. At this point, however, the analyst should not refrain from stating the ideal frequency with which data are desired for the variables which were selected. Unless the analyst knows the frequency with which certain data are issued, it is better to assume that desired data are available than to overlook them, thinking they are not produced.

7. On Outline Indicate Known Sources of Data

Go through the outline and identify those items for which data are known to exist. On the outline itself, identify the agency or source that produces the information and, if possible, the years or general time periods for which it exists. If more than one agency or source produce data for the same variable, list these on the outline. Often, different data sets are needed to provide a complete picture of what is occurring within a given topical area (see discussion below on employment by industry, step 9). Having this listing available will save time later when data to be used for the analysis are chosen.

8. Use Outline as Guide for Locating Data

From the outline, data that are still needed can be seen easily. As a result, the outline should be used as a tool to guide and focus the data collection effort which now needs to occur. The manner in which this effort is organized should be tailored to the ability and preferences of the individual analyst.

At the outset, it is suggested that the analyst consult the sources listed below. These are as follows:

Labor Market Information and CETA Planning. Denton, TX: Institute of Applied Economics, North Texas State University, under contract to the U.S. Department of Labor, 1980.

Occupational Information System (OIS) Handbook, Volume 1, Occupational Information Development. Washington, D.C.: National Occupational Information Coordinating Committee, January 1981.

Occupational Information System (OIS) Handbook, Volume 2, Occupational Information Analysis, Presentation and Delivery. Washington, D.C.: National Occupational Information Coordinating Committee, January 1981.

These sources provide extensive information about data availability, such as, what data are produced; data coverage; frequency with which produced; geographic coverage; description of the data; suggestions for its use; limitations of the data; agency producing data; methodology used to develop data. The North Texas State University spans many topical areas that will be listed on the outline. It is especially good for State Employment Security Administration data, Bureau of Commerce data, and general labor force and employment data. The OIS Handbooks are especially valuable for the information provided about data collection efforts of various federal government agencies. Some of the efforts described are for data currently not needed by the analyst. However, the references offer suggestions for data that the analyst might consider substituting for desired information that cannot be found.

There are other resources available to assist the analyst and these should be examined. The ones mentioned above, for the most part, focus on standardized data sources that are produced uniformly in every state. Every state and local area has its own set of data producers. These need to be located and contacted by the analyst. A good starting point for this effort is the LMI Directory of Publications produced by each SESA. This is a guide to the special data sets and reports that this agency produces for that particular state. Other resources

are state and local telephone directories. Although these do not directly yield data they offer agency names and telephone numbers of likely data producers. These are especially valuable for the analyst desiring to utilize administrative data for special population groups, or to locate special surveys and studies that may have been conducted by a state or local office.

The data collection effort can be a slow, tedious one, especially if this has not been emphasized before at the agency. This report focuses on data collection as it relates to the preparation of the labor market analysis. Actually, however, data collection should be an ongoing concern of the labor market analyst and the focus should extend beyond the labor market analysis. Generally, the more data that are available to the analyst, the more effectively the analyst's work can be utilized as part of the ongoing planning and management tasks of the agency. To help the analyst structure and organize a data collection effort, both for the labor market analysis and for other general tasks, Appendix B, "Data Collection," has been included.

As emphasized elsewhere, the analyst needs to be creative in this endeavor. Where needed (or desired) data cannot be found directly, the analyst might want to consider using "proxy," or substitute, variables for which data are available. For example, if the analyst wants to get an idea of the number and needs of "youth in poverty" in a given area, such data may not be directly available (except during years when census data are available). From a combination of different sources, however, enough information can be gathered so that the analyst can make inferences about the local area. Often, state education departments keep a yearly count of the number of school-age youth in poverty. State and local welfare departments sometimes have records of the number of youth (and their ages) in families receiving AFDC payments. Characteristics of youth registered for services at the SESA can be developed from table 93 of the ESARS data, as can the number of youth receiving unemployment insurance. Dropout information (total numbers of dropouts as well as reasons) is easily available, and numbers and ages of youth who are incarcerated can usually be developed. When all of these data are amassed and placed in the context of the local area (most information comes on a county level) the analyst can get a good, if somewhat broad, overview of the local "youth in poverty" situation. Static, absolutely precise numbers may not be possible to develop. However, for the labor market analyst, trends, changes over time and the general patterns which the data portray, are often more valuable than the precise numbers themselves.

If desired data cannot be found, even indirectly as just illustrated, the analyst needs to ask: (1) whether the data cannot be dropped completely; (2) if the use of CETA administrative data would suffice; (3) if another agency could not be persuaded to produce the data; or (4) whether development of such data should not be earmarked for a future work schedule.

9. Choose Data to Use for Labor Market Analysis

At this point, the detailed outline for the contents of the labor market analysis should be modified according to the available data that have been found. Some variables (or topics) will have to be deleted because of insufficient data while the level of aggregation or the desired time frame will have to be modified for others. Once these changes have been made, the analyst then faces the responsibility of choosing the data that will serve as a basis for preparing the labor market analysis.

This means, first of all, that the analyst must become familiar with the data that have been located and collected. The following basic questions can be asked in order to accomplish this:

1. Where do the data come from? What agency or what source(s) produce the information?
2. If relevant, how are the data computed (this is important for suvey-based data)?
3. What is included in the data; what is the data saying (or explaining)?
4. What is excluded from the data; what does the data not say (or explain)?
5. What are the confidence intervals of the data, if pertinent?
6. For survey data, are weighted averages or numerical averages used?
7. For projections, what was the methodology that was used?

This process will help the analyst decide which data are most appropriate for the analysis. After reviewing each data set, the analyst may choose to exclude some of the data. Additionally, where more than one source of data are available for a topic in the outline, this exercise will (1) aid in the choice of one data source over another; or (2) help to focus the analysis in such a way that different aspects of the same topic can be examined by using different data sets.

As an example, several sources of data are probably available for the topic "employment by industry." Two of the most common producers are the State Employment Security Agency and the U.S. Department of Commerce. From Employment Security, historical employment by industry data can be obtained at a

county level on a monthly basis. This information is only available at the broad level of industrial classification. However, it is consistent over time for individual counties and offers a good basis for determining general trends, shifts over time, and patterns. Once these developments have been examined, the analyst may wish to know things, such as (1) a more detailed idea of the industrial sectors in which employment changes occurred; (2) whether the changes resulted from a change in the number of firms in the area; and (3) whether employment changes occurred in small, medium, or large firms. Data to answer these concerns can be developed from County Business Patterns. Then, the analyst may wish to examine local-area, entry-level employment demand on an industrial and occupational basis. Information extracted from table 10-A of the ESARS series can be developed to provide a broad overview for this. Finally, an analyst may wish to know which industrial sectors are expected to show employment increases in the next two to five years. Statewide and regional (or, at times SMSA) projections usually are available from Employment Security. These may not always be available at the desired geographic level or at a fine enough level of industrial detail. The analyst's knowledge of the local area is a base, or a benchmark, against which the projections can be compared. Current "employment by industry" patterns, combined with other qualitative labor market data (see step 13 below) allow an analyst to begin making informal observations and inferences about expected industrial employment growth in the local area.

Taken together, these different data sets begin to give a fairly comprehensive idea of what is occurring with industrial employment in the local area (or areas). The data were not developed by the same agency, nor by the same method or unit within the same agency. This does not mean that these data cannot be used to examine the same issue (i.e., industrial employment); it only means that any interpretation based on these different data sets should not compare or intermix information from one data set with that from another. The analyst can, however, use the patterns from one set of data (e.g., County Business Patterns) to suggest details about trends that emerge from another (e.g., historical employment by industry from the SESA).

By choosing data carefully and by being familiar with the data (i.e., by answering the questions listed above), the analyst is well on the way to developing a fairly comprehensive analysis of the local labor market. The example that was offered for employment by industry gives an example that can be repeated for other outlined topics.

10. Arrange Data in a Form for Computations

Now that the outline for the labor market analysis has been established and the data chosen, the next step is to arrange the data, if needed, in a form from which computations can be made easily. This step is really the first of several that are needed to prepare data in such a way that a meaningful narrative can be developed that describes and explains local labor market trends.

At this point, thought needs to be given, for the most part, to time intervals for which the data are to be displayed. General decisions for many of the data sets have already been made in step 9. However, at this point, detailed decisions are needed as to whether data will be displayed on a monthly, a quarterly, biannual, or an annual basis (or some other combination). Once these decisions are made, work sheets should be developed that will allow the analyst to make necessary computations easily. Usually, these involve simple functions additions, divisions, ratios and percentage, or frequency distributions. The work sheets are needed, especially for raw data which come from Employment Security. Long columns of data must be summed and then distributed on a percentage basis. Or, changes must be traced over a lengthy period of time. Mistakes can be made easily, and use of the work sheets both makes these easier to see and saves time over the long run.

11. Perform Basic Computations

Next, actual computations are performed. The principal idea is to arrange the data in such a way that increasing or decreasing changes over time can be studied. The concern is with the following:

1. seasonality (are there industries in the local area--construction, agriculture, or wholesale trades--which typically have higher, or lower employment at a given time of year; or are there typical times of the year when unemployment is higher than at others);

2. trends (is the overall direction of employment over a given time period growing or declining; is the labor force generally growing or declining over a given time period; is the general trend in the number of youth under twenty-two registered as eligible for unemployment insurance at Employment Security increasing or decreasing over a given period);

3. cyclical trends (within longer-term trends, are there any repetitive, cyclical patterns that can be traced--especially regarding industrial employment and labor force--total civilian employment--unemployment levels);

4. monthly, quarterly, biannual, or annual fluctuations (for almost any set for which a description of current activity is being offered).

The objective is to arrange data so that comparisons or contrasts can be made, distinct patterns identified and similarities determined. As mentioned above (step 10) ratios are often helpful (e.g., the ratio of job service applicants with identifiable occupational skills to employer job listings for the same occupation can indicate the amount of labor market competition that exists within a given field). Averages are used extensively (annual averages are used for comparing employment by industry from one year to the next; quarterly averages are frequently used for displaying trends in employment, unemployment, and labor force change within a given year; also, demographic trends in Employment Security applicants--table 93 of the ESARS series--yield valuable information when traced on a quarterly basis for a given year).

When a narrative finally is prepared, much valuable, descriptive and explanatory information can be developed just using these basic techniques and studying the data in a systematic, organized fashion. Often, the development of information for a local area (e.g., a county or a group of counties) becomes more meaningful when it is compared with the same kind of information for surrounding counties, or with the state or the nation.

A local analyst (and the labor market analysis itself) can certainly benefit from the use of other techniques--simple ones especially such as the use of the median and mode and weighted averages, standard deviations and regression coefficients--but they should be used carefully and the results interpreted in a clear manner. Most often, such techniques are more appropriate for other work which the analyst may be called upon to do (e.g., the development of local-level economic indicators or labor market performance indicators for local training programs).

For the analyst interested in pursuing the use of more involved computational and statistical techniques, reference is made to the following publications (see the bibliography for complete citations): Labor Market Information and CETA Planning (Institute of Applied Economics, North Texas State University); Job Market Futurity: Planning and Managing Local Manpower Programs by Garth Mangum, et al.; and Selecting, Analyzing, and Displaying Planning Information by Harold Starr, et al.

There are two analytical techniques for analyzing the industrial employment base of a given local area. These are the shift-share analysis and the export orientation analysis. These techniques have been described and explained in various texts. However, the review of these techniques that is provided in the book, Job Market Futurity is one of the more concise, detailed, and easily understandable explanations. For a complete, step-by-step guide to the value and use of these techniques, the analyst is referred to either the above-mentioned book or to Labor Market Information and CETA Planning (training materials produced by the North Texas State University for the U.S. Department of Labor). In order to provide the analyst with an overview of the techniques, the following summary paragraphs are quoted from the book, Job Market Futurity.

A. Shift-Share Analysis

Shift-share analysis is a technique for estimating the impact of national conditions on developments in the local labor market. Its essential product is an estimate of the sources of growth and decline in the local industrial mix. The mathematical technique is typically used with time series data.

The shift-share technique attempts to explain and differentiate that part of change in the industrial structure which can be attributed to the local share in overall national growth from changes attributable to a shift to or from the local area which is more the result of local factors and advantages. It is a powerful technique for understanding local industrial structure. In addition, it is useful for making and gaining insights into longer-term projections. For example, if the planner discovers a set of consistent relationships between the local and national industrial structures, and if it can be assumed that these relationships will continue into the future, then the better and more available data on national trends and projections can be used to gain insights into future directions, changes, shifts, and share in the local industrial structure.

B. Export Orientation Analysis

Another useful technique for understanding the level of changes in the structure of local industrial employment is the export orientation method. This technique attempts to measure the extent to which industrial production and employment are geared toward local consumption or toward consumption outside the local labor market. This is significant because the planner must know which industries export outside the local market and which produce only

for the local market. It has long been believed that labor markets which export a considerable amount of their production to regional or national markets are stronger than labor markets primarily engaged in production for local consumption. Export jobs are jobs based on sales to the outside. The export-oriented economy does not rely on local consumption and brings new money into the area; however, an export orientation also makes the local economy more dependent on shifts and changes in the national economy and national consumer tastes.

The techniques for assessing the export orientation of the local labor market are (1) the location quotient methods and (2) the excess employment method. Both of these techniques are simple yet powerful tools.

The location quotient is merely a ratio between the percentage of local employment in a specific industry and the percentage of national employment in that same industry. A ratio greater than 1 indicates that an above-average proportion of total industry output is being produced in this locality. The assumption is that the product of this above-average proportion is being exported to areas outside the local labor market.

The excess employment method begins with an estimate of what local industry employment would be if it followed the national average. This hypothetical figure is then compared to actual local industrial employment, and the difference is attributed to export orientation. A positive difference indicates that more workers are employed by an industry than the national average. A negative difference indicates that the input of the local industry is probably insufficient to meet local demands, and therefore industries outside the area export part[3] of their products of services to the local area.

12. Develop Data Displays

At this point, the analyst needs to consider carefully what CONCEPTS and INFORMATION to present in the labor market analysis. Then the task is to make provisions for displaying the data in a way that enhances the presentation. Appendix B, which follows the body of the report, offers assistance to the analyst for doing this task.

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[3] Garth Mangum, et.al., pp. 178, 180-183.

Before becoming seriously involved in creative data displays, however, the analyst should spend some time looking over the data. The idea, in slang terms, is to "eyeball" the data to see what striking trends, patterns, comparisons, and contrasts emerge. Once the analyst has a grasp of these, thought should be given to the most effective way of displaying them. For most of the data, simple, straightforward tabular displays are best. However, industrial sector employment can be shown quite effectively on a bar graph. Broad occupational and industrial employment can be illustrated by a pie chart. Contrasts in either industrial or occupational employment among counties in a consortium arrangement can also be shown nicely on bar graphs or pie charts. Similarly, a line graph is an excellent means of demonstrating trends in total civilian labor force levels, employment, and/or unemployment levels. Each of these data can be presented separately for a local area on a line graph which also shows the same measurement for the state and the nation. Or, all three elements can be presented for the local area on the same line graph. This is an especially good method for presenting data from a time series.

13. As Needed, Supplement the Quantitative Data with Qualitative Data

To get a good grasp on what is occurring presently in the local labor market, and of what can be expected for the short-term future, it is a good idea to supplement the quantitative data with that which is qualitative. This information will provide a good, general context in which to place the analysis of the quantitative data. Additionally, it can serve as a supplement and a base for projections which the analyst may be using. Qualitative data varies greatly and may include articles about local socioeconomic occurences from local newspapers and magazines, articles of relevance from local employer and union publications, or information from a telephone survey of local economic and industrial developers.

On an annual basis, it is helpful to do an informal and relaxed survey (by telephone) of the economic development community, whether or not the information is incorporated into the labor market analysis. Individuals to be contacted include staff from the local chamber of commerce, planning commissions, industrial development commissions, civic improvement groups, manufacturers or trade and labor associations, members of overall economic development programs, and local economists in private business or universities. Economists in local utility companies are helpful, too, as are those employed in local banks or lending institutions. With these individuals, a review should be made of any new construction planned, pending industrial relocations or expansions, and expected new economic development and capital

improvement projects. If several counties are included in the prime sponsor's area, such persons should be interviewed from each county. Information from these efforts should, whenever possible, be classified by broad industrial categories. The same is true, when appropriate, for occupations.

It is also a good idea to check with individuals in state offices of industrial, community, and economic development. Staff from occupational licensing bureaus may be helpful as are institutional planners on the staffs of junior colleges, technical schools, and proprietary schools. This last group of individuals, particularly, can offer insight related to the occupational sector of the labor market. New licensing requirements, new paraprofessional job classifications, and new occupational training courses all offer clues that something is changing in the labor market and consequently merits attention.

14. Organize Quantitative and Qualitative Data--Review it Carefully

Up to this point, the analyst most likely has not had an opportunity to work with the broad spectrum of data that have been gathered and prepared. The next step will be the development of an interpretive, descriptive analysis based on the data. Therefore, this step is a precursor to that one. Now, the analyst should try grouping various data sets together and looking for distinct similarities and differences. Also, time should be spent examining individual tables and graphs and fitting these into a broader, organized context. All data within a major group (e.g., employment by industry, employment by occupation, labor force-civilian employment-unemployment levels) should be examined individually, as should all data pertaining to one geographic area (where two or more are being analyzed). The emphasis is one of description and explanation. The analyst's objective is to (1) study the data; (2) create questions for the narrative that the data can answer; and (3) develop a general overview of the local labor market that is a mixture of the analyst's "reading" of the data and personal knowledge about labor market events.

15. Develop a Descriptive Narrative Based on Data Interpretation and Analysis

The objective now is to organize the data in such a way that a meaningful, descriptive narrative can be created to accompany them. The analyst, at this point, should consider the data that are available, the trends, patterns, and variations that were noted in completing the preceding step, and the information that agency staff needs. After regarding these issues, the analyst should group the data in the way that yields information to address the issues.

The analyst may wish to consult planning commission publications or economic development plans from the local area before beginning the narrative. Often, such reports contain insights about local communities and economic performance that are helpful for explaining the environment in which employment and training programs operate.

The depth that is given to any portion of the narrative will depend upon the data which are available and the need which agency staff have for a closer examination of a given topic. For example, in a consortium setting, consortium-wide trends may have been studied closely in the past. The real need, then, might be for an in-depth review of population, labor force, economic, and employment patterns in each county within the consortium; or the need might be for an understanding of the relationships of these elements among the county members of the consortium. It is recommended that, data permitting, all the topics included under step 1 are touched upon. However, those receiving the most concentration are chosen by the analyst.

The text of the narrative should be well organized and clear. Also, the prose and style should reflect simplicity. Whenever an economic term is used that most readers might not understand, time should be taken to explain it. If data show a trend or pattern that is significant, an explanation should be offered. For example, it is meaningful if the labor force, employment, and unemployment levels are all rising at once. Do not just suggest that this is a meaningful trend. Go on to explain that this can be a sign of health for the local economy, depending on the rates of the increases in relation to one another. Describe, in prose, what these trends mean, what may have caused them, and what they may signify for the local economy. The reader should be provided with enough information so that the analyst's manner of thinking can be followed easily. Attention paid in this way to the narrative can mean a readier acceptance of the labor market analysis as a tool for planning and managerial decision making.

16. Translate the Descriptive Interpretation into Implications and Recommendations for Local Employment and Training Programs

This is where the really creative and analytical work of the analysis occurs. Up until this moment, the analyst has been working with fairly straightforward concepts and information. Ingenuity and creativity were needed to locate data sources, to work around data inadequacies, to join different data sets together in

a meaningful way, to create data displays, and to develop a meaningful narrative. Now, however, all the previous work comes together in the form of direct recommendations for employment and training programs. Recommendations, most likely, will be of three types: (1) suggested occupations and industries for training programs, job development, and job placement strategies; (2) suggested target populations most in need of service; and (3) labor market occurences in the local area that merit attention, monitoring, and study during the coming year. The recommendations that are made should be based on what the prime sponsor's agency is already doing, as well as on information yielded by the data. From this perspective, then, a recommendation may be simply to continue what is already being done, or to modify current efforts slightly. Other options, obviously, include developing new program efforts or deleting existing ones.

For industrial and occupational training recommendations, a "priority rating system" can be established based on data that were used for preparing the labor market analysis. To do this, the analyst selects specific criteria on which to rate each occupation that is of interest to the prime sponsor agency. An initial list of occupations can be developed, usually, using Employment Security data (Job Bank data can be used as can occupational employment projections, Job Order data from the ESARS series, and any special data that the agency has developed on shortage and surplus occupations or special job opportunities for vocational and technical school graduates). Once an initial listing is established, specific criteria can be chosen (e.g., wages per hour, education or training required, percentage of growth in projected annual average openings, numbers of persons trained in other institutions, and others which the analyst chooses). Points are then assigned for each criterion which an occupation meets. Occupations are then ranked according to the number of points received. The resulting list may then become a guide for occupations that are recommended for training. (For a more complete explanation of the analytical process associated with the development of priority rating systems, refer to either Labor Market Information and CETA Planning or Job Market Futurity.)

The use of the shift-share analysis and export orientation analysis mentioned above (step 11) can be a valuable tool also for the development of training recommendations or for providing guidance for job development and placement efforts. For example, extra points could be assigned in the priority rating system described above for those occupations that are found in industries with employment growing by a preselected annual percentage, or in industries determined to be export oriented." An examination of data developed by the state SESA-produced OES survey data can yield helpful information for this latter step, as can table 10-A of the ESARS series.

Most likely, the overall mix of the target population will not change significantly. However, the analysis may indicate that a geographic shift is needed in services to specific population groups, especially if the prime sponsor services several counties. Should the data indicate a significant change in population groups, a priority rating system can be established also to help with the recommendations that must follow. The Labor Market Information and CETA Planning and the Job Market Futurity publications both have sections devoted to the development and use of this analytical exercise.

Regarding the CETA client, changes may occur over time in either (1) the supportive services individuals need to make them more employable (e.g., remedial education, work experience, health care, financial assistance or counseling, coping skills, child care assistance); or (2) malfunctions in the labor market itself that pose barriers to gainful employment. The first of these can be the domain of the labor market analyst. However, in order to develop recommendations for such services, an analysis would have to be made of the agency's administrative data. A priority rating system could be developed to determine service needs in order of their occurence among the client population; then recommendations could be developed for needed changes (see Job Market Futurity for a discussion of this). The malfunctions in the labor market are the domain of the analyst. A listing of such situations in the local area that needed to be monitored, and perhaps studied carefully, in the coming year should be included in the analysis. It can be developed as an outgrowth of the data analysis that has been conducted. As an illustrative example, the following list which has been adapted from Job Market Futurity is offered:

Malfunctions In The Labor Market

A. Examples of Economic Malfunctions

1. Underutilization of available and willing manpower as manifested by unemployment, involuntary part-time employment, and the discouraged worker phenomenon
2. A wage structure with earnings such that full-time, year-around employment leaves many economically deprived
3. Deficient productivity leading to a slow growth of real per capita income
4. Misallocations of labor in terms of socially determined preferences among alternative goods and services
5. Labor and skill shortages such that socially needed and economically demanded production does not occur
6. Geographical misallocations of labor, leading to relative surpluses in some locations and shortages elsewhere
7. A disintegration of labor market supply and demand trends such that emerging jobs are out of reach of the skills or residential locations of those in search of jobs
8. Any of the inflationary pressures of the economy which emerge from the labor market

B. Examples of Personal Malfunctions

1. Unemployment rates excessively differentiated by age, sex, race, or location
2. Persistence of poverty among family units which have within them persons of labor market potential
3. Differentials of earned income levels beyond what society considers to be equitable
4. Individuals without the motivation or general capability or knowledge of the labor market or job skills to earn a reasonably satisfactory income
5. Perverse incentive systems which make economic dependency more attractive than self-sufficiency
6. Persons working in jobs that do not use their full skills or that provide no job satisfaction or prospects for improvement
7. Persons denied satisfactory employment opportunity for reasons other than their ability to perform job tasks; for example, discrimination by age, race, or sex
8. Unrealistic expectations of individuals as to career and income prospects[4]

[4]Garth Mangum et al., pp. 110-112.

Conclusion

The foregoing procedures were intended as a guide for the staff member responsible for conducting a labor market analysis for a local CETA agency. As stated earlier, many of the details regarding data choice, analytical techniques for analyzing data, and methodological issues surrounding data use have been omitted because of the attention given such issues in other publications. In this report, rather, the emphasis was on the process an analyst could use to conduct an analysis of the labor market and the major tasks, issues, and considerations that would be encountered along the way. The creative and active role of the analyst in this process was stressed specifically. Additionally, the idea was offered that for the most part, data exist in some form to answer "almost" any question an analyst could ask; however, to be useful, such data must be analyzed, interpreted, and presented in a meaningful way which explains and describes the local labor market.

Much of the work associated with the preparation of the labor market analysis centers on organized data collection and data preparation (i.e., analysis) efforts. Earlier in the report, the reader was referred to Appendix A for a more complete discussion of a data collection effort. Now, a referral is made to Appendix C for a more complete discussion of the development of a labor market information management reporting system. The discussion does not present in-depth procedures for implementation. It does, though, present a good overview of the concept, a definition of its component parts, and a review of the uses it has for both the analyst and the CETA agency. Taken together, these efforts are basic ones for almost all work that is required of an analyst. Thus, any time spent developing and implementing them is worthwhile and valuable.

APPENDIX A

APPENDIX A
DATA DISPLAY

It is important that thought and attention be given to the manner in which data are presented. Effective data displays enhance a labor market analysis in many ways:

- -they create interest and call attention to the message
- -they facilitate easy comprehension and retention of the data which are portrayed
- -visualization of large masses of data at a glance is made possible
- -problems are presented in a comprehensive picture
- -the ability of effective data displays to bring out hidden facts and relationships can stimulate and aid analytical thinking.

Tabular and graphic forms of presentation are most common for displaying quantitative data. The tabular form arranges numbers in columns and rows, while the graphic technique utilizes points, lines, areas, and other geometric forms to represent the quantities indicated by the numbers.

Whether graphic or tabular techniques are used, three factors underlie satisfactory display of quantitative data: simplicity, clarity and effectiveness. The graphic and tabular forms of data display must be easily read and understood, and must be presented in a manner which will facilitate ease of comprehension and retention. These purposes require consideration of: (a) the nature of the data; (b) the purpose of the display; (c) the medium for presenting the data; and (d) the audiences to whom the data are presented. One or all of these factors may be pertinent to any situation where data are presented or displayed.

The following discussion examines the use of tabular and graphic forms of display individually. The major uses for each form are reviewed, as are advantages and disadvantages. Because there are such varieties of graphic forms of display, each one will be treated individually. They are: line graphs, bar and column charts, pie charts, flow charts, and pictorial charts.

SOURCE: The information in this section is excerpted from the following: Harold Starr, Clyde Maurice, Michael Black, and Paula Keller. Selecting, Analyzing, and Displaying Planning Information (Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University, 1979) pp. 61-102.

Tabular Displays

The purpose of tabular displays is to compare or classify related data items.

With tabular displays, the body of the table is filled with data in the form of quantitative values. The data are organized and given logic by correct headings and by the propriate use of lines as separators or dividers. These dividers and headings conceptually allocate the data into various classes for the purpose of comparison.

When preparing tables for display, the following cautionary notes should be observed:

1. Footnotes can be used with each table to qualify, explain, or provide information relating the table as a whole, or to refer to a particular column or individual entry.

2. Care should be taken not to overload tables with variables. Too many variables may detract from the intended purpose of facilitating ease of comprehension and comparison.

3. It is best to avoid placing lines between each row designation, since too many lines may detract from the homogeneous appearance of the table. However, these lines may be used when an abundance of blank spaces makes it difficult to assign numbers to their appropriate columns.

4. The table should be intelligible without reference to the list or narrative referring to it.

5. Entries must be properly aligned to clarify relationships within a table. This is of critical importance when vertical lines are not used to separate individual columns.

6. When considering the tabular form for displaying data, variables may be included as follows:

   -As column heads or box heads at the top of the table
   -As major designations in the stub column, or as subcategories under these major designations
   -As spanner heads spanning the width of the table, providing that the column headings at the top of the table possesses categories common to each spanner heading

An example of a tabular display is as follows:

Postsecondary program designation	Number Enrolled					
	AG		DE		Home Ec.	
	Male	Female	Male	Female	Male	Female
Short-term adult	1,000	1,000	1,400	1,050	50	1,000
Long-term adult	2,500	3,000	1,000	1,200	1,000	3,500
AA degree	2,000	500	2,500	2,500	1,500	2,500
Total	5,500	4,500	4,900	4,750	2,550	7,000

Graphic Displays

These displays differ from tabular displays since points, lines, area, and other geometric forms are used to represent the quantities indicated by numbers. These geometric forms are combined in various ways to translate an array of numbers into a structure which will efficiently impart the information within the array.

Line Graphs

This type of display is characterized by the plotting of one or more series of values along two scales and joining the successive plotted points together in the form of a continuous line.

Advantages. The plotted line catches the eye and readily shows minimum and maximum values as well as the general direction of rise or fall. It enables close reading or interpretation with little expenditure of effort.

Uses. Line graphs may be appropriately used -

. when there is a series with many successive values to be represented, e.g., trends or improvements over a period of years;

. when there are several series or trends to be compared on the same chart;

. when emphasis is to be placed on movement rather than actual amounts.

Line graphs are inappropriate -

. when relatively few plotted values are in the series;

. when emphasis should be on change in amounts rather than on the movement of a series;

. when the desire is to emphasize the difference between values or amounts on different data;

. when movement of data is extremely violent or irregular;

. when the data display is designed for popular appeal.

Cautionary notes. The following cautions should be observed when preparing line graph.

. The title of the chart should be placed at the top. Care should be taken to eliminate all superfluous words by asking three basic questions: what? where? and when?

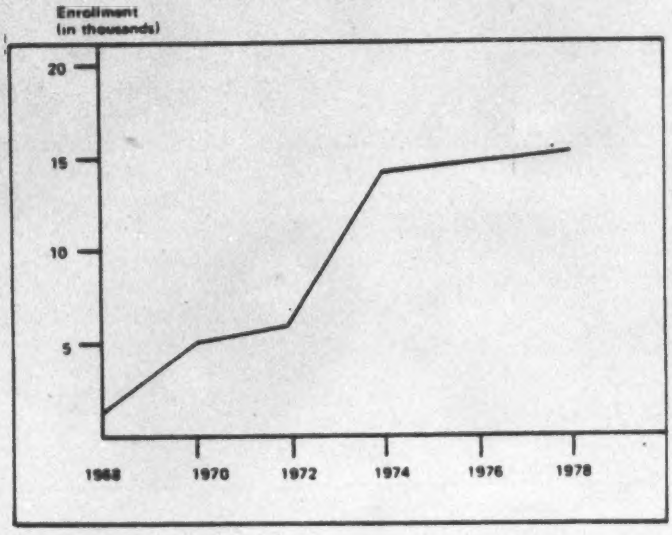
. The title must be tailored to the audience.

. The number of lines or trends represented on a chart should be based on its potential use, the size of the chart, and the clarity of the coding system. It is wise to remember that the effort is to aid and not to retard comprehension of the data.

. No more lines should be used in the formation of a grid than those which are necessary to guide the eye in reading values.

. The scale should be kept simple, and the scale caption should contain that information (e.g., the omission of zeros must be shown in the scale caption).

Example. An example of a line graph display is as follows:



Bar or Column Charts

The bar or column chart is directly related to the line graph. It is drawn from a series of values plotted against two axes, but instead of being joined by a line, the values are represented by vertical bars. Each bar is usually kept separate from its neighbor, with the length of the bar proportioned to the quantity represented. The distinguishing feature between bar and column charts is whether the bars or columns are drawn vertically or horizontally; the bars are horizontal, while the columns are drawn vertically.

It is important to note that one bar (or column) in a graph emphasizes actual quantity (it does not show changes in quantity).

Advantages. The bar or column chart has a number of advantages as a data display technique; these include the following:

- It is particularly useful when information consists of distinct units (months, years, programs).

- Columns can be turned on their sides, so that the placement of letters enables easy reading.

- It is particularly appropriate for comparing the magnitude or size of coordinate items or parts of a total.

- It enables the eye to readily appraise the basic difference in the size of bars, and hence in the magnitude of the quantity represented.

Cautionary notes. The following cautions should be observed when using bar or column charts:

- Adapt arrangements of bars to the purpose of the display. Usually bars are arranged in order of size, but sometimes geographic subdivisions or other concerns may be most appropriate, and, hence, these can be used as the basis for arrangement.

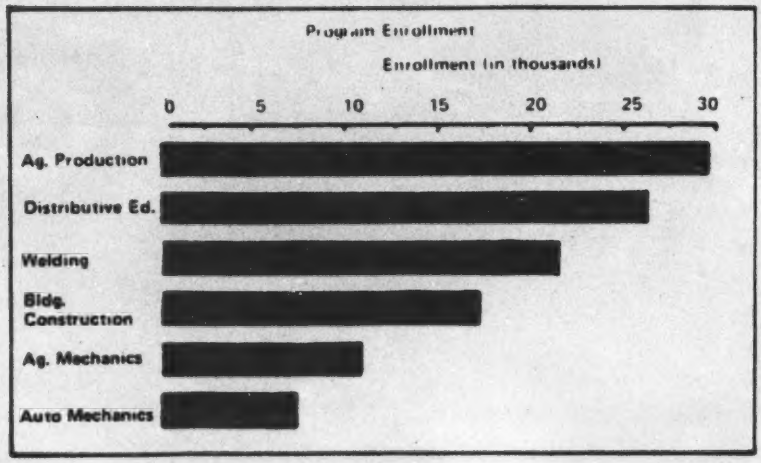
- The width of bars should be uniform and should be based on the number of bars and the spacing between them. Care should be taken so that bars are not disproportionately long and narrow, or short and wide.

- The scale of the bar chart should always begin at zero. Since zero is the main reference point, the zero line should be emphasized by making it slightly heavier than the other scale lines.

- Intervals should preferably be indicated in round numbers (e.g., 5, 10, 25, 50, etc.). Odd numbers such as 3, 7, and 13 should be avoided.

- Data on the chart should generally be placed on the left of the zero line outside the grid. In the event of limited space, however, bar labels can be placed within each bar (leaving a shaded space around letters) or above the bars.

Example: An example of a bar chart is as follows:



Pie Charts

This graphic form uses various sectors of a circle to represent component parts of an aggregate or total. Each component part is proportional to the value it represents.

Advantages. The circle (or pie) is easily conceptualized as a whole, hence, division into a few large contrasting components is readily understood.

The popularity of this graphic form may facilitate receptivity to data.

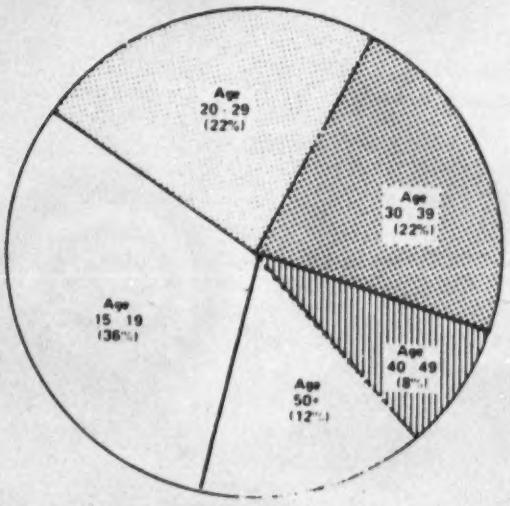
Cautionary notes. The following cautions should be noted when considering the use of pie charts:

- Portraying more than four or five categories by means of pie charts makes it difficult to differentiate between the relative values portrayed.

- It is complicated and time consuming to divide part of a circle into representative proportions.

- There is some difficulty in comparing sectors of different sized circles. Since the size or area of a circle represents the quantity portrayed, it is extremely difficult to compare components of small and large variables when each variable is represented by an individual pie chart.

Example. An example of a pie chart is as follows:



Flow Chart

The flow chart uses a concept analogous to the movement of a river, stream, or waterway which divides and reduces its flow, or combines with other flowing systems to increase its flow. The movement and distribution are depicted in a variety of ways--the complexity depending on the system being represented. Usually, the direction of flow is represented by arrows, and quantities are represented by varying the thickness of the flow lines. Different shading may be used to represent the flow of different items.

Advantages. With a well designed flow chart, it is possible to present a large number of facts and relationships simply, clearly and accurately without resorting to extensive and involved verbal description.

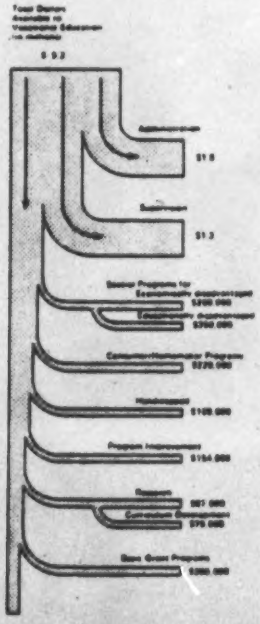
The concept of flow enables easy association with process, movement, or distribution. This contributes to quick comprehension and long retention of the information displayed.

Uses. Flow charts are used to emphasize successive movements through a process from the starting point to the finish.

They are used to show -

- the various steps in a series of operations;
- the processes or sequences involved in the planning, production, and distribution of some product;
- the flow of income and expenditures as indicated by the sources of funds and the manner of disbursement.

Example. An example of a flow chart is as follows:



45

Pictorial Displays

There are many types of pictorial displays, all seeking to maximize the appeal of some graphic form through artistic expression. In some of these displays, pictorial symbols of varying sizes are used to represent the values displayed; in others, pictures or sketches are drawn to embellish or highlight aspects of the display. The most frequently used, and the most effective form of pictorial display, however, is the three dimensional representation achieved through projection techniques. Bar and column charts, pie charts, as well as trend graphs, are frequently enhanced through the depth and picturelike qualitites achieved by three dimensional representation. The examples presented in this section are limited to three dimensional projection, but depending on the purpose, other forms of pictorial display may be equally effective for communicating data.

Purpose. There are many advantages to pictorial displays. They are as follows:

- Pictorial displays have popular appeal.
- Pictorial displays are desirable for communicating to persons with a dislike for statistical charts, or to persons who have difficulty understanding other display forms.
- The facts portrayed in pictorial charts are said to be remembered longer than facts presented in tabular or nonpictorial forms.

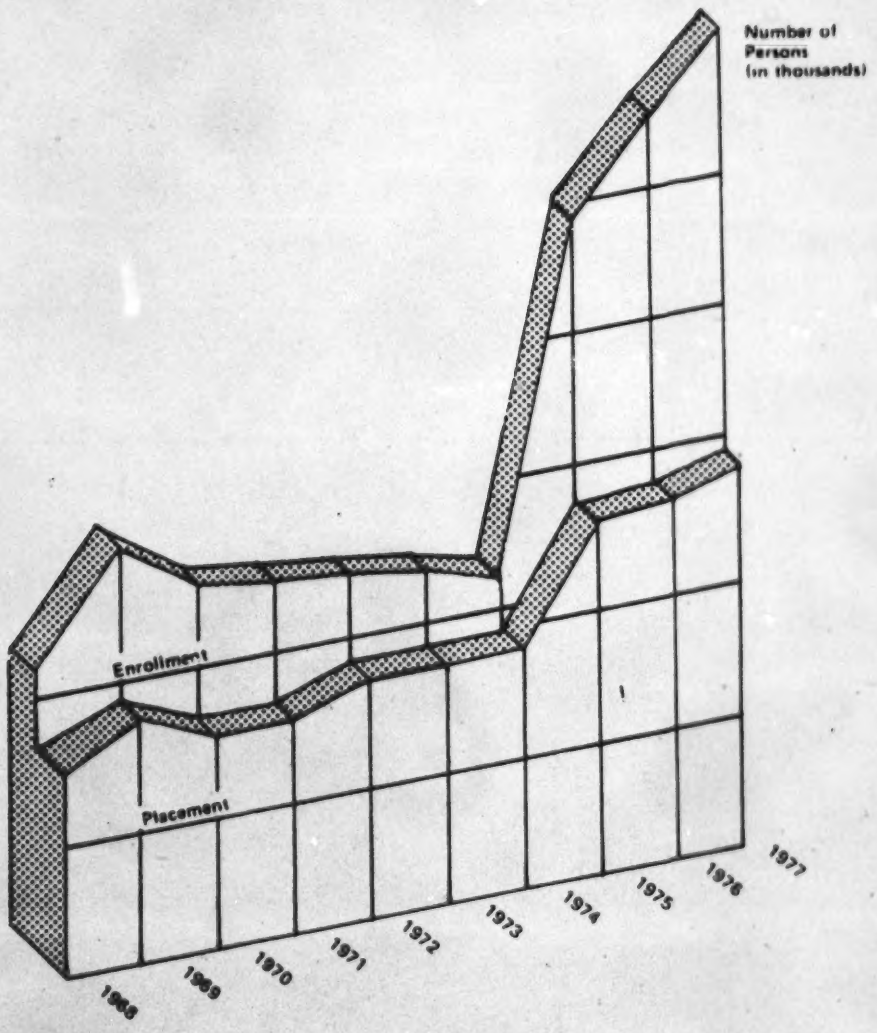
Cautionary notes. The following cautionary notes should be observed when preparing pictorial displays:

- The user should be familiar with the basic principles of projection techniques to avoid the construction of three dimensional charts which are distorted or misleading.

- Three dimensional representation is very time consuming. The user should carefully weigh the benefits of three dimensional displays with the conventionally drawn chart of the same type. The major criteria for evaluation are simplicity, authenticity, precision, appropriateness, and appeal.

- When constructing three dimensional bar and column charts, it must be remembered that the front face shows the true size and shape representing the value portrayed.

Example. An example of a pictorial display is as follows:



APPENDIX B

APPENDIX B

DATA COLLECTION FOR PREPARATION OF THE LABOR MARKET ANALYSIS

The collection and analysis of labor market data are prerequisites to the planning of employment and training programs. Program planning through the explicit use of labor market analysis promises a higher degree of employment and training success, an explanation for those who inquire why programs proceeded as they did, and a means to use experience to modify programs. Whether or not explicit analysis can deliver on these promises, however, is determined by (1) the abilities of the analyst, (2) the time devoted to analysis, and (3) the sufficiency of the data.

It is difficult to specify exactly the amount of time required for a successful labor market analysis. However, presupposing the presence of an analyst who is familiar with the process of data analysis, three observations can be made about the amount of time required for the completion of an analysis.

1. At the outset, it takes a substantial amount of time to become familiar with the available statistics. The analyst needs to know what data exist, who collects them, how current they are, how frequently they are collected, and what their shortcomings are. Additionally, the analyst must determine what data are collected by the Employment and Training Administration for the required grant application. Also, the analyst needs to determine what data are necessary to meet agency planning and operations needs. There is a significant time investment required, but once this is learned, the process need not be repreated (unless turnover for the analyst position is a problem).
2. The time devoted to data collection and analysis should be apportioned in blocks and not in a "bits and pieces" fashion (i.e., time snatched away from other functions). Blocks of time permit the analyst to think about how all the data fit together and to develop a good overview of the local area's socioeconomic environment.

NOTE: This section is adapted from procedures developed from a labor market information data collection project at Mercer County Consortium Services, Inc., by Dr. Randyl Elkin at West Virginia University, 1976.

3. If the quantity and quality of available statistics are deficient, the time necessary for analysis is increased.

What is most needed as a basis for the analytical process is the creation of a system for the continuous collection of labor market analysis and planning data. As a beginning for this, it is good to sit down and determine key variables for which data need to be collected. The variables should be those which will permit both good labor market planning and the fulfillment of Department of Labor specifications.

Once these variables are determined (for an illustration, see the listing on page 49), a search then needs to be undertaken to locate as many statistical sources as possible for each one. In order to determine the variables most appropriate for a local area, several reference sources are available:

1. Guidelines and procedures which the Department of Labor issues for the preparation of grant applications
2. Federal regulations pertaining to employment and training programs
3. Labor market analyses that have been prepared by other prime sponsor agencies
4. Interviews with internal staff members regarding needed labor market information
5. Interviews with internal staff at selected external agencies (primarily planning commissions and economic development agencies)

Along with the variable selection, a determination should be made regarding the level of aggregation that is desired. For example, county-level data is often more useful than mult jurisdictional or statewide totals. Additionally, a decision needs to be made regarding the currency of the data.

The data collection process actively moves forward with the analyst's asking of the question, What agencies gather and/or use statistics for each of the selected variables? In the process of answering this question, a list of pertinent federal, state and local agencies needs to be compiled. Once this is completed, each agency needs to be contacted to determine whether it has data useful for the planning effort. Simultaneously, local libraries could be consulted to determine whether data are available "from the shelf."

Once determinations of data sources are made and available data are collected, the data sources should be cross-referenced according to the selected variable. Frequently, one source will be referenced to several variables. To make such referencing easier, a summary listing or file should be developed that records all data sources amassed for each variable. Then when the labor market analyst develops a need for data on a specific variable, the source(s) for that information is readily available.

Agencies that are known to produce needed planning statistics should be contacted periodically. These agencies should be kept aware of the prime sponsor's data needs and ways in which they can be helpful. (Also, it is important for the prime sponsor to be aware of other agencies' needs and how the CETA agency can help them.)

Frequently, an external agency and the prime sponsor can work together to develop (and/or collect) needed data, especially that which pertains to the local level. For example, if a prime sponsor needs data on the characteristics of offenders and such statistics have not yet been developed, prime sponsor staff can develop a working relationship with the state probation and correction officers and administrators. Working together, these individuals can develop cluster samples to produce the needed information. This same process can be followed for the development of other needed data.

In summary, the collection and analysis of labor market data contributes significantly to the planning of employment and training programs. The process for doing this was described above. A brief recapitulation follows:

1. Determine the variables for which information and data are needed.
2. Develop a list of agencies and sources that may have the needed data.
3. Contact the agencies or search through the sources to determine whether the information is available, how often it is issued, the geographic area for which it is available, and what format it is in.
4. Establish a listing that cross-references each variable with the agency(ies) and/or source(s) where it can be found.
5. Where possible, acquire the most recent data available and for at least a county level of aggregation. If possible, more disaggregated levels should be sought--city, township, and borough.
6. Assess the data available for each variable to determine whether the information is at a level needed for the planning effort. For some variables, data may not exist in the desired form. It may be too aggregated, or it may be outdated. Also, sufficient data may simply not be available. Specify as closely as possible the exact form of the data that are missing.
7. Where data are not available in the needed form, or, simply do not exist, begin a search procedure to find the information. Contact additional agencies or recontact ones which have already given data. Some of these

agencies may be able to offer referrals to other sources. Others may be able to prepare their data in ways which will meet the prime sponsor's needs. For this reason, unmet informational needs mentioned in (6) need to be closely specified. (Be sure to follow such efforts with a special letter of thanks.)

8. If no data source exists, determine whether it is possible to get by without it. If not, the data will have to be obtained by survey, extrapolation, or interpolation. The best thing to be done in this situation is to gather the available information and using personal knowledge of the area and situation, make an informed judgment.
9. The key to current, useful data is to keep in contact and develop good rapport with the agencies that collect and disseminate information.

Sample Key Variables

Age Distribution
Birth
Blacks
Children
Civilian Labor Force
Coal Mining and Miners
Commerce
Commuting
Earnings
Economically Disadvantaged
Education
Elderly
Employment
Farm Workers
Females
Government Employment
Handicapped
Head of Household
Hourly Wage
Housing
Income
Industry
Males
Manufacturers
Mentally Retarded
Migrants
Offenders
Population
Poverty
Seasonal Workers
Spanish Descent
Unemployed
  Underemployed
Unemployment Insurance,
  Federal Supplemental Benefits,
  Supplemental Unemployment
  Assistance
Veterans
Vocational Rehabilitation
Welfare

APPENDIX C

APPENDIX C
TOWARD THE DEVELOPMENT OF A LABOR MARKET MANAGEMENT INFORMATION SYSTEM

Data collection is the first and most basic task that needs to be undertaken before labor market information can be used efficiently for planning and operating employment and training programs. However, once it has been collected, another task must be done before it can be effectively used. This task includes the translation of raw data into a format that is understandable and useful for planning and operations. Before data can be analyzed and interpreted, they need to be shifted from rows and columns of numbers that have little meaning for agency operations to charts, graphs, and tables that are specially designed for users of labor market information--both internal staff and external agency personnel. The process of this translation is carried out most effectively by the creation of a labor market information management reporting system.

Although this may sound at first like the creation of a highly sophisticated, computerized information system , in reality it is not or, at least, it need not be. What is referred to, rather, is (1) an organized and systematic method of filing, formatting and monitoring data so it can be easily analyzed and interpreted over a period of time; and (2) an organized and systematic method of disseminating data to users, once it has been analyzed and interpreted. It is possible to implement and maintain such a system on a manual basis. A computerized system certainly saves time and can perform easily many of the functions needed for analysis and interpretation. However, if time and costs are the only consideration, a manual system will serve equally as well.

The objectives for the creation of the Labor Market Management System are twofold.

1. The development of a closer integration between planning and field staff by the creation of informational tools that provide direction and guidance for operational activities
2. The development of more responsive and appropriate services for those in need of employment and training assistance by the creation of informational tools for those who plan and administer such services

These tools which are mentioned are primarily brief reports that are issued periodically (usually quarterly). They are based on analysis and interpretation of the data which are part of the information system. They may also be data packets that are issued periodically to meet specialized needs of LMI

users. The analyses and interpretation(s) which form the basis of these reports may be more extensive and may give more attention to certain aspects of the labor market than do the quarterly reports. A major feature of the information system is that it offers a better understanding of the labor market and a firmer idea of how the prime sponsor's delivery system is "performing" in relation to the local economy. This is because one of the primary informational ingredients of the system is the agency's own, in-house administrative data.

The system, once established, can have a variety of uses which are illustrated by, but not limited to, the following examples:

1. Provide technical support and assistance to those who are responsible for the agency's intake and assessment, and job development and placement efforts.
2. Develop specialized information for CETA participants during orientation sessions.
3. Provide specialized information for CETA participants ready to enter, or engage in, a job search effort.
4. Develop special information for program managers and administrators so that they have-
   a. a better understanding of the local economy from both an agency and a local labor market perspective;
   b. as precise an understanding as data permit of occupational employment trends;
   c. an overview of short-term industrial and occupational growth trends in the local area.
5. Contribution to the development of a programmatic strategy that emphasizes and strengthens a job development component.

For the most part, the system calls for data that already exist and/or are produced by other agencies. However, data do not become necessarily a part of the system in the exact form that they are received by the agency. What is special about the system is that data which become a part of it are in a form that is uniquely applicable and useful to the prime sponsor's agency. In other words, the labor market planner or analyst takes data that arrive from any number of sources (e.g., census data, the State Employment Security Agency, the local planning commission), determines how they are most useful and then reformats them in a manner most useful to the agency or individual staff member's needs. This may mean combining, where appropriate, information from different sources, using only a limited portion of the information, arranging it on a special table so that it can be analyzed from a different perspective, or recording the information in a graph, bar chart, pictorial display, or other mechanism so that changes and trends can be monitored over time. Once these efforts are completed, the analysis and interpretation of the data are performed and the special reports and information packets prepared.

The implementation of the system has two phases, one of which is data oriented and the other, program related. The time taken to develop the system will vary widely depending upon factors, such as (1) available staff time to design and develop it; (2) amount of input which operational staff members can give; and (3) availability of data.

The specific data and informational components of the system will evolve as a result of some experimentation and in stages. Initially, most of the reports will be of a "monitoring" rather than a "predictive" style, which means that the performance of the local labor market during the previous quarter (or other selected time period) will be examined closely. As time goes on, (after about a year) the reports will become more predictive (especially for the short term) in terms of those occupations and industries that offer good placement potential. Such reports will only be as guiding statements, however, because the art of employment forecasting and projection is limited, at best.

Most of the initial base information and data will come from the State Employment Security Administration. These data do not cover fully the entire employment and economic market. However, the information is fairly representative of an area entry-level employment market (especially the job bank--job order data) and will permit the establishment of trends to monitor local-level activity. The reports based on this initial data will enable close, ongoing attention to be paid to--

1. industrial employment growth and/or decline on a local-level basis;
2. entry-level occupational employment trends on a local-level basis;
3. entry-level hourly wages by broad occupational category, on a local-level basis;
4. shortage and surplus occupations;
5. characteristics of individuals generally needing employment assistance.

Such information will give a more precise idea of jobs that may be available and some idea of the competition that may exist in the labor market for such jobs. It can also permit indicators (or benchmarks) to be established against which in-house agency performance can be compared. Consequently, as a result of the quarterly report, job development, placement, and training strategies can be tailored more closely to the cyclical nature of the local economy. Additionally, the orientation and job search information given to CETA participants can reflect more accurately the dynamics of the local labor market.

To accompany the industrial and occupational reports, a brief, quarterly report will be developed of demographic trends of those registered for services at the Bureau of Employment Security. This will be prepared at the county level and will provide a benchmark against which the agency can compare whether--

1. the kind of people really in need of employment and training services are being reached;
2. the mix of CETA clients is reflective of the demographic composition of economically disadvantaged in the local labor market;
3. Modifications, on a quarter-by-quarter basis, need to be made in the composition of the client population served (i.e. whether program modifications need to occur in order to accomodate a greater number of people from a given population subgroup).

Eventually, the data, both employment and demographic related will be arranged in such a way that they become a good, solid planning tool that can be used actively in combination with CETA-MIS data. From such a combination, it will become possible, on a quarterly basis--

1. to monitor the kinds of jobs and occupations in which CETA participants are finding employment;
2. to identify some industrial and occupational employment trends for specific groups;
3. to determine the types of jobs which people are not getting or for which they are not qualifying;
4. to form a more concrete idea of the link between program outcomes and local economic trends.

Aside from the development of special reports and information packets, the management system may yield information that can contribute to an effort that is much more active-- a more intense placement strategy. The quarterly information could furnish a basis for meetings of those within the agency responsible for placement and/or job development. These meetings could -

1. serve as a basis for placement coordination and cooperation among agency staff from different geographic locations (i.e. counties) and in a limited fashion among similar staff from other social service agencies;
2. serve as a review for in-house staff of the last quarter placement efforts, significant problems that may be developing, potential solutions, and strategy planning for the next quarter (i.e., suggestions of the best kinds of jobs to develop for specific population groups, and the "best" sectors of the economy on which to focus efforts);

3. serve as a time to discuss budget allocations for placement efforts and OJT contracts; public relations efforts; the need for developing special information for local employers and for conducting special employer surveys for current, specialized, and firm-level employment data.

There are many uses for the data and information that can be yielded from a labor market management information system. Only a few have been explored here. However, the hope is offered that the value of such an effort is clearly visible. Much time, thought, and effort are needed for the creation of this system. Once in operation, however, the system can organize the agency's data analysis and interpretation tasks into a simpler, more efficient process that ultimately yields benefits in a wide variety of ways.

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